

## **Report of Three-Day Workshop on “AI-Driven Clinical Research: Bridging Technology, Biomedical Research, and Health Sciences”**

### Lamp Lighting Ceremony (Inauguration)

The workshop commenced with a traditional Lamp Lighting Ceremony, symbolizing the illumination of knowledge and the beginning of scholarly dialogue. The dignitaries, including the Chief Patrons, Principal, Convener, Organizing Secretary, and invited resource persons, collectively participated in lighting the ceremonial lamp.

The ceremony reflected the core values of JSS Academy of Higher Education & Research—wisdom, purity, learning, and the spread of knowledge—setting a solemn and auspicious tone for the workshop. All participants joined in offering respect to the divine light, seeking blessings for the success of the academic proceedings.

The lamp lighting was followed by:

- Invocation Song, performed by students of JSSCP Ooty
- Welcome Address by the Organizing Secretary
- Inaugural Remarks by the Principal and Chief Patrons
- Introduction of the Workshop Theme and objectives by the Convener

The ceremony marked a meaningful beginning, fostering a spirit of unity, collaboration, and academic commitment among all attendees.

The three-day workshop “AI-Driven Clinical Research”, organized by the Department of Pharmacy Practice, JSS College of Pharmacy, Ooty, was conducted with the aim of strengthening the capacity of healthcare professionals, researchers, and students in adopting Artificial Intelligence (AI) for clinical and translational research. The event successfully brought together experts from medical, pharmaceutical, engineering, and data science domains, fostering an interdisciplinary Learning environment essential for modern research ecosystems.

### Day-wise Detailed Report.

#### Day 1 – Foundations of AI in Clinical Research & Translational Science

The inaugural sessions introduced participants to the conceptual and theoretical basis of AI, including machine learning (ML), deep learning (DL), neural networks, and clinical informatics.

Experts from JSS AHER, VIIT Pune, and Amrita Hospital demonstrated how AI accelerates

biomedical discovery, supports early disease detection, and enhances evidence-based decision-making.

#### Key Highlights:

- Foundational understanding of AI principles, supervised/unsupervised models, diagnostics algorithms.
- Demonstrations of AI-driven radiology analysis, oncology applications, and pattern recognition.
- Orientation on the role of AI in study design, protocol development, endpoint selection, and patient stratification.
- Discussion on translational pathways—bridging laboratory findings to clinical implementation.

#### Outcome:

Participants acquired a strong theoretical foundation necessary for understanding AI applications in biomedical sciences.

#### Day 2 – Applied AI in Clinical Research, Data Handling & Real-World Applications

The second day focused on hands-on demonstrations and methodological training. Real-world clinical datasets, case examples, and disease-specific applications were used to engage participants in active learning.

#### Core Learning Components:

- Data preprocessing (cleaning, feature extraction, normalization) for clinical datasets.
- Building and validating ML models for disease prediction and patient risk scoring.
- AI-based tools for pharmacovigilance, adverse event prediction, and automated drug-safety monitoring.
- Exposure to statistical modelling, bias evaluation, and interpretation of algorithm outputs.

Introduction to AI-enabled decision support systems (CDSS) used in major hospitals.

Resource persons from Tata Memorial Centre, CMC Vellore, and Alpha Grid demonstrated workflows that clinicians and pharmacists can adopt in their hospitals or research environments.

#### Outcome:

Participants gained practical experience with AI tools, improving their capability to independently process datasets, build predictive models, and understand interpretation challenges.

#### Day 3 – Ethics, Regulation, Implementation & Translational Outcomes

The final day emphasized regulatory, ethical, and policy concerns, ensuring responsible use of AI within healthcare frameworks.

Key Topics Covered:

- Data governance rules (ICMR guidelines, NDHM standards, informed consent requirements).
- Algorithmic transparency, managing bias, and ensuring fairness in AI-based decisions.
- Ethical implications in patient data handling and predictive modelling.
- Steps to translate AI research outputs into clinical practice, product development, and publication standards.
- Panel discussion on challenges faced by clinicians in adopting AI, infrastructure needs, and future opportunities.

Participants also presented group reflections, highlighting how they planned to apply AI in their own research, dissertations, hospital projects, and community health interventions.

Outcome:

The workshop strengthened participants' understanding of ethical compliance and regulatory expectations. Participants were able to articulate the opportunities and challenges of AI-driven clinical research with improved clarity and responsibility.

Overall Outcomes and Impact Assessment

1. Knowledge Enhancement:

Participants reported a significant increase in their understanding of AI concepts, clinical applications, and research methodology.

2. Skill Development:

Hands-on sessions improved competence in data handling, machine-learning workflow design, and predictive model evaluation.

3. Interdisciplinary Integration:

The workshop successfully brought together pharmacy, medicine, computer science, and clinical research professionals, encouraging collaborative translational research.

4. Research Capacity Building:

Participants expressed confidence in applying AI-based approaches in their own research projects, including dissertations, retrospective clinical analyses, ADR monitoring, and RWE generation.

5. Ethical & Regulatory Awareness:

Participants gained clarity on responsible AI use, patient consent, data protection, and compliance with national guidelines.

6. Technology Adoption:

Exposure to real-world AI tools motivated institutions to consider adopting AI-enabled systems for hospital workflows, pharmacovigilance, clinical auditing, and patient monitoring.



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**உப்புடி JSS மருந்தியல் கல்லூரியில் "AI இயக்கப்படும் கத்துவ ஆராய்ச்சி" என்ற முற்பயரும் தேசிய பட்டறை தொடங்கி**

